Hearing, taste, and smell were altogether normal. The hemiplegia was never recovered from, the patient became somewhat unruly and demented, and was finally taken to the Montefiore Home, where she had remained for many years.

A few further details of the patient's chronic condition were elicited in examination. There had been no history of syphilis, but there was very marked atheroma of the peripheral arteries. In addition to the left hemiplegia, the patient had suffered amputation of the right leg above the ankle, for old necrosis of the tibia, fully six years before. There was rigidity of the left leg, and increased knee-jerks of both sides. The wrist reflex was decidedly increased on the paralyzed side, but the left upper extremity was subject to the wildest ataxic movements. This would go on until the arm dropped from exhaustion, when it would remain quiet until aroused again by an effort to use the hand. She became extremely emotional, took very little nourishment, and finally died. The diagnosis of crus lesion of the right side, probably softening from thrombosis, was made, and confirmed by the autopsy.

NEW YORK NEUROLOGICAL SOCIETY.

Meeting of October 7th, 1890.

The PRESIDENT, Dr. L. C. GRAY, in the chair.

Dr. W. B. PRITCHARD presented a specimen, and the history of a case of "Tuberculous Meningitis," see p. 720.

CAN WE DIAGNOSE HYPERÆMIA OR ANÆMIA OF THE BRAIN AND CORD?

Dr. WILLIAM A. HAMMOND read a paper on this subject. The writer had for many years been familiar with a group of symptoms, which, from their etiology and general characteristics were indicative of cerebral disturbance, and some twenty-five years ago, after considerable observation and many experiments performed upon living animals and the human subject, he had come to the conclusion that they were the result of an increase in the amount of blood circulating in the vessels of the brain. His conclusions were first published in an article on "Insomnia," in 1865. various papers appearing on the subject at subsequent intervals, and lastly in a monograph issued in 1884, entitled "Cerebral Hyperæmia the Result of Over Mental Work or Emotional Disturbance," in which additional facts, the outcome of continued experience were brought forward in support of the theory advanced. In the writer's opinion there were certain symptoms which positively indicated the existence of cerebral hyperæmia, and which he had designated as symptoms of the first class. There were others which inferentially led to the same conclusion. especially when they were associated with symptoms of the first class. Those were embraced under the term symptoms of the second class. Others again were indicative of derangments of various organs of the body, which, though important as adding to the discomfort of the patient, might be due to many different primary pathological states and therefore were not included in the present discussion. The symptoms of the first class were, first. wakefulness ; second, pain, heat, a feeling of fullness or distention in the head, a sensation of a band encircling it, a dragging and clawing sensation at the vertex, vertigo and hallucinations, provided, and this point was especially impressed, that these symptoms were increased by any known factor which increased the amount of blood in the brain. Third, a congested condition of the tympanum, and the optic disc, the retina, and the choroid. The theory which the writer had advanced repeatedly was that natural sleep was due to a comparative anæmic condition of the brain, normal wakefulness to an increase of the amount of blood in the cerebral vessels, and insomnia to an abnormal quantity of intra-cranial blood. Persistent insomnia was the necessary accompaniment of the pathognomonic symptom of the affection in question. Without wakefulness there was no cerebral hyperæmia ; with cerebral hyperæmia there was always wakefulness. Numerous experiments made upon animals, had fully demonstrated those facts. It was well-known that during the process of digestion there was a diminished amount of blood in the brain, and it was for this reason that persons felt sleepy after ingestion of a hearty meal. Although those observations and experiments were conclusive enough, further demonstration had been made by means of an instrument devised for the purpose of determining the existence of cerebral hyperæmia. By its means observations were made upon the movements of the brain and the blood-pressure within the cranium. It consisted of a brass tube, which was screwed into a round hole made in the skull with a trephine. Both ends of this tube were open, but into the upper was screwed another brass tube, the lower end of which was closed by a piece of very thin sheet india rubber, and the upper end with a brass cap, into which was fastened a glass tube. This minor arrangement contained colored water, and to the glass tube a scale was affixed. This second brass tube was screwed into the first, till the thin rubber pressed upon the dura mata and the level of the colored water stood at O, which was in the middle of the scale. Now, when the animal went to sleep, the liquid fell in the tube, showing that the cerebral pressure had been diminished, an event which could only take place in consequence of a reduction in the quantity of blood circulating in the brain. As soon as the animal awoke the liquid rose at once. The experiments were performed upon dogs and rabbits, and in every instance the pressure was lessened during sleep and increased during wakefulness. The writer thought that nothing could exceed the conclusiveness of experiments of this character. Of the second group of symptoms, hallucinations being the most remarkable, was the only one considered. A number of cases were cited from the recorded experience of the writer and other observers. In most of the cures reported, the spectre or apparition had appeared to the persons on retiring to rest, or on inclining forward, and vanishing when the erect posture was assumed. The explanation of such cures was very simple. The recumbent position facilitated the flow of blood to the brain, and at the same time tended, in a measure, to retard its exit. Hence, the appearances were due to the resulting congestion. As soon as the individuals rose in bed, or stood erect, the reverse condition existed, the congestion disappeared, and the apparitions went with it. Hallucinations of hearing were not infrequently produced by like causes. A number of cases were related to illustrate this point. The writer did not want to be understood as saying that there was a fixed condition of the fundus of the eye and the tympanum, which was associated with cerebral hyperæmia, but that observations should be made from day to day in each case, when it would be found that as the other symptoms of cerebral hyperæmia disappeared, the retina, the choroid, and the tympanum would lose their congested appearance. So that when health was restored the fundus of the eye, and the drum head were found to be very different from what they were when the disease was at its height. There were certain agents, which by their action appeared to increase the amount of blood in the brain, and others, which apparently diminished it, and which were hence important in their diagnostic relations. If to a person suffering from insomnia, pain in the head, vertigo, and hallucinations, should be given one or two hundredths of a drop of nitroglycerine, the trouble would become unbearable. Like effects followed the use, at such a time, of quinine, strychnine, and other agents. Among those remedies used to diminish the amount of blood in the brain, the bromides stood preeminent. Another diagnostic fact, was in the action of ergot. As was well-known this substance possessed the property of constricting the organic muscular fibre. The writer was convinced from personal investigations that ergot did contract the cerebral vessels, and hence it diminished the quantity of intra-cranial blood. The writer said in conclusion that when he had a patient suffering from insomnia, pain in the head, vertigo hallucinations. suffusion of the face, cephalic heat, and other striking symptoms of perhaps less special importance, and when he found these symptoms disappear under the influence of remedies, such as the bromides, ergot, ice and douches of cold water to the nape of the neck, cups in the same locality, nasal blood-letting or spontaneous hæmorrhage, position, and other means calculated to diminish the amout of intracranial blood, he did not see how an escape was possible from the conclusion that the patient was suffering from cerebral hyperæmia.

Dr. M. A. STARR said that while he did not wish to be understood as representing those who opposed Dr. Hammond's views, still his convictions at present were those expressed by Dr. Gray in his paper, read recently before the society. The symptoms which had been explained by the existence or assumed existence of cerebral hyperæmia were many of them symptoms which could be produced by other causes. Such, for example, as wakefulness, which was often noticed in individuals when very much exhausted. In puerperal women who had suffered severe hæmorrhage. He had also certainly observed it in patients who were anæmic. Therefore, to say that wakefulness necessarily indicated an hyperæmic brain was to advance a theory which was hardly tenable. Certainly, hyperæmia of the brain might, under certain conditions be diagnosed, but it was a very open question whether this could be done when only wakefulness was present. As to the question of drugs, he had been very much surprised to hear it stated by Dr. A. H. Smith and Dr. Peabody, at a meeting of the Practitioners Society, last winter, that those gentlemen had been treating cases of supposed hyperæmia of the brain with nitro-glycerine and nitrite of amyl. These drugs which were supposed to increase the supply of blood to the brain were being given upon the hypothesis that they dilated the entire arterial system of the body, and the brain would thereby be relieved to a certain extent of blood. The reasoning at least appeared sound. The speaker thought it impossible to base a diagnosis upon any individual symptom.

Dr. J. LEONARD CORNING thought this was not scientific reasoning. The truth might probably be more nearly arrived at by careful induction. If a man came complaining of headache, having a congested face, with a pulse of high tension, whose symptoms could be promptly relieved by pressure upon the carotids, the jugular or bandaging of the legs, might such a patient be assumed as suffering from congestion or anæmia of the brain? The speaker thought congestion. Suppose quinine or alcohol should be given to such a patient and it was found that the symptoms were aggravated it would be certainly concluded that the trouble was congestion.

The PRESIDENT said that of course Dr. Hammond spoke with authority, this they were all prepared to admit. The fact that he was able to do so had much to do with the acceptance of his conclusions without criticism. Still no dictum in relation to a scientific point could be allowed to stand on personal authority alone. The conclusions must bear the force of investigation and be supported by fact. Dr. Hammond must not consider the discussion as having the least personal bearing, but as merely the expression of a general desire to elucidate the problem as far as possible. Dr. Hammond had stated the symptoms of cerebral congestion as being sleeplessness, with a certain feeling of compression or oppression about the head and a flushing of the face.

Dr. HAMMOND here suggested that he had said these symptoms were increased by the dependent posture or by anything which would increase the circulation.

Dr. GRAY accepted the correction and went on to enumerate the conditions in which these symptoms might be found. For instance, insomnia was common enough in mental diseases and worry, melancholia, overwork, constipation and in many conditions in which there was nothing to show that there existed any hyperæmia of the brain. In the early stages of intra-cranial syphilis there was a condition somewhat of the nature of hyperæmia. But then in Bright's disease, in which there was hyperæmia and congestion there existed a condition of stupor. If the list of causes of insomnia were gone through it would be possible to find a certain train of symptoms which would lead to the assumption of existing anæmia in some, and hyperæmia in others. Experiments had recently been made on the brains of animals, the report of which differed from those of other recorders. As to the point made that the brain rose or increased in volume during the waking period, it was an open question whether this was not due to cellular action producing an increase of blood. As to the association of sleeplessness with the recumbent posture, of course the extended observations of the author of the paper were deserving of due consideration, but so also were the more limited observations of the speaker in this respect, and he had not been able to verify the association. The question before them was not as to the existence of cerebral hyperæmia or anæmia, but as to whether it could be clinically diagnosticated. Flushed face might be dependent upon chorea, general paresis or injury to the brain. It was impossible to say whether the symptom was brought on by hyperæmia alone. The feeling of oppression and sense of fulness in the head was found associated with errors of refraction, insufficiency of the ocular muscles, changes of climate, errors of diet, and so forth. To assume that in all those conditions there was hyperæmia of the brain was assuming a good deal, and more than could be proven. It was a point which had not been demonstrated by any pathologist, as to whether there could exist by itself an increased amount of blood in the cellular tissue or other finer structures of the brain without causing disease of the surrounding parts. It was strange that Dr. Hammond after five months' preparation of the subject had cited no autopsies in confirmation of his theory.

Dr. C. L. DANA said he thought it was now generally agreed that there was such a condition as cerebral hyperæmia and that it could be recognized in its acute forms. Such a state might be produced by drugs. Congestive neurosis, trauma, and so forth. The question was and is, what was the condition at the base of that functional disorder which had gone by the name of cerebral neurasthenia ; and whether its initial stage was that of hyperæmia or the hyperæmia was a secondary process ? An acute and chronic hyperæmia of the brain were conditions admitted to exist, but it was preferable to say functional cerebral neuroses or psychoses, where the hyperæmia was a secondary process, and that seemed the inevitable conclusion to those who watched these cases. Many patients among the neurasthenics showed symptoms of congestion of the brain, others of this class did not in any way present the symptoms of the classic type of cerebral hyperæmia, but showed the condition so shaded down that it was necessary to set aside all the symptoms generally described. There was something at the back of the hyperæmia. The hyperæmia of the brain was secondary to some disorder of the vaso-motor nerves or to some functional condition involving the whole nervous system. As to insomnia and cerebral hyperæmia, that question was obsolete. To state that sleep was produced by anæmia and wakefulness by the return of the normal amount of blood to the head was, the speaker thought, in the light of modern neurological studies, a theory which could be described as unworthy further investigation.

Dr. HAMMOND thought that his points had been unanswered in the argument. When Dr. Dana said that the neurologists of to-day ignored the theory of the physiological changes during sleep, a theory which the speaker might claim as his own, he thought Dr. Dana in error. He would remind them that he had stated that headache presented innumerable causes for its existence. and it was only when he found it with flushed face, and vertigo, and when it was increased by the dependent position of the head that the diagnosis was certain. Then he knew his patient had hyperæmia of the brain, all the neurologists in the world to the contrary notwithstanding.

THE SENSATION OF ITCHING.

This was the title of a paper by Dr. E. B. BRONSON. He said that it was a somewhat remarkable fact that a manifestation of cutaneous irritability so common as itching, and one with which as a symptom we are so familiar, had been almost entirely neglected as an independent study. Of other anomalies of sensation, such as hyperæsthesia, anæsthesia and pain we had tolerable clear and definite ideas. But what was the cause and nature of pruritis? What this disturbance of sensation? Notwithstanding the fact that the special senses in their present state were so far removed, in respect to the knowledge they yielded to consciousness, from common sensation, there doubtless was a period when the distinction did not exist. Their differentiation had been the result of gradual and long-continued processes of evolution. There could be little question that the sensory organs to which the several senses owed their special attributes had all originally developed from simple nerve endings, that gave but the vaguest intimations of external objects. In this evolution the impelling force, the directing impulse, had been derived from the two grand principles of life known as the instinct of self-preservation and the instinct of reproduction. To one or the other of those instincts every sensation that arose in the body must be referred. All sensations, as had been shown, were originally tegumentary. To the common integument must be ascribed the source and potentiality of all sensations. As the result of specialization most of those sensations had been withdrawn from the exterior. What traces of the special senses thus abstracted still persisted in the skin might be infinitesimal. There still remained to the skin and adjacent mucous orifices a variety of sensations; others more specialized, including a special sense with perceptive faculties, and finally the most important representative of the reproductive instinct, the aphrodisial sense. The only sense with which the skin was endowed that could be called perceptive and that was worthy of comparison with seeing, hearing, smelling and tasting, was the sense of pselaphesia. It included the sense of contact, which was seen in its most primitive form; its most important element was pressure sense, while the temperature and muscular senses were more or less essential auxiliaries. Common sensation was represented in the integument in its highest positive aspect, by the voluptuous sensations, in its lowest negative aspect, by pain. Returning to the question, what relation to the sensory organs of the skin and to their sensations did the sensation of itching bear? The author believed that there was sufficient evidence to locate the essential seat of pruritus in the epidermis. Itching was evoked by such irritants as acted upon this tissue much more uniformly than by those that acted on the derma. However provoked, the sensation of itching was always associated with a presentment to consciousness as though a foreign body were in contact with the surface. It was that sensation, that experience through many stages of animal life, had taught, was often followed by a prick, or a sting, and the inclination to escape the threatened hurt had grown into an animal instinct. The sense of contact at a minute portion of the sensitive surface was immediately interpreted to mean a miniature attack that must be repelled. If no attack had really been made, but only the threat, then the excitement should disappear without returning the moment the cause producing the sense of contact was withdrawn. But it was this peculiarity of itching that it persisted in spite of such withdrawal, and was only relieved by the act of scratching. It seemed as though the contact, or whatever the change might be that gave rise to the irritation, produced a molecular commotion in the nerves that went on like the jangling of an electric bell, with the continuance of the sensation until such time as the surcharge of nervous energy was released. In pselaphesia the nerve force or the molecular vibrations excited by the impact was directly transmitted into some intelligent form of activity and the accumulation of nerve excitation, the nervous engorgement, did not occur. The circuit was complete with no point of resistance intervening to obstruction, and so commotion. With regard to the effect of scratching in relieving itching, it was analagous to that produced by muscular exertion, as in those animals in which the platysma myoides was more highly developed than in man, as in the horse and bovine genera, a certain relief might be afforded to pruritic sensation through its energetic contractions, and which was not wholly due to expulsion of the insect or whatever else might have caused the sensation. While some of the phases of itching might be associated with pathological changes in the eperdermis, others had their source more deeply situated and were referable to the nerve centres. To the latter belonged the form of neurosis of which pruritis was at the same time the symptom and sole appellation. Still other sources were doubtless to be found associated with apparently normal physiological conditions. While those represented the most obvious sources of itching or provocations for scratching, there was another factor of which hitherto but little account had been taken. Both the English words itch and itching and the Latin prurio and pruritis, in their secondary significations, conveyed the idea of a longing, teasing desire, while pruritis was commonly used by the Latins as a synonym for lasciviousness. By desire, something more was meant than merely the inclination to brush or scratch away a foreign body of which the sensation was apparently an intimation. It was rather a kind of desire closely akin to a lustful feeling, and one that sometimes made scratching veritably a sensual indulgence. When pruritis reached a certain degree of intensity, the subject was not content with that moderate amount of scratching that would ordinarily create a sufficient diversion to give relief, but there was a disposition to attack the itching surface with a vehemence that amounted to a passion. Recognizing this peculiar element of desire in pruritis, the sexual excitement and depraving tendencies that were so commonly associated with pruritis genitalium was most easily explained. But it was not so surprising that voluptuous sensations should attend itching where they had their natural seat. Such sensations were, however, not confined to the genitalia. They might be concomitants of itching in almost any situation. By means of a violent excitation superinduced by severe scratching, provoked by pruritic irritation, a liberation or discharge of nervous energy took place, accompanied by pleasurable sensations, together with the release of the pruritis irritation. A temporary inertia and rest followed and continued until a renewal of the pruritis provoked another resort to the same method of relief. As to why these processes were attended with pleasurable sensations, it sufficed to say it satisfied a law of being. Gratification of appetite was a condition of life, either of the preservation of life or of the reproduction of life. The sexual, the aphrodisiac appetite could only be secondary to the instinct and appetites of self-preservation. From the foregoing consideration the following conclusions were drawn :

(1.) That there was a sense of contact independent of the sense of pselaphesia.

(2.) That this sense of contact was the sense disturbed in pruritis.

(3.) That it primarily concerned simple cutaneous nerves, or nerve endings, situated superficially and probably in the epidermis.

(4.) That the disturbance in pruritis was of the nature of a dysæsthesia due to accumulated or obstructed nerve excitation, with imperfect conduction of the generated force into correlated forms of nervous energy.

(5.) That scratching relieved itching by directing the the excitation into four channels of sensation, sometimes, especially when severe, substituting, for the pruritis either painful or voluptuous sensations.

(6.) That the voluptuous sensations might attend pruritis were a manifestation of a generalized aphrodisiac sense, representing a phase of common sensation that had its source in the sense of contact.

Dr. L. D. BULKLEY considered Dr. Bronson's paper one of the most scholarly he had ever listened to. He then referred to some studies he had made as to the reflex character of itching. For instance, if the itching sensation were on the fingers of the right hand, irritation or pinching of that finger would cause a reflex sensation of itching in the neighborhood of the scapula of the same side. He had only found one or two instances in which it was transferred to the opposite side.

Dr. STARR asked whether it was ever thought that itching was a symptom of central nervous disease. Patients with locomotor ataxia were said to be frequently troubled with itching around the arms, scrotum and perineum. He had never seen a case confirming this.

Dr. B. SACHS had never seen it in organic nervous disease, but in functional disorders, such as crural neuralgia, he had known the itching to be more obtrusive than the pain. It was a frequent condition of profound anæmia, and often observed in hysterical women, and in cases of hystero-epilepsy.